Session 1

AMUSEMENT PARK

Directions

Numbers 1 through 4 are about going to the amusement park with your friends. Show all of your work and write your answers directly in this booklet.

1

The outer ring of horses on the merry-go-round is 30 feet from the center. The inner ring is 25 feet from the center. If you are on the outer ring and your friend is on the inner ring, what is the difference in distance traveled by you and your friend after the merry-go-round completes 15 revolutions? Provide the work that shows how you arrived at your answer.

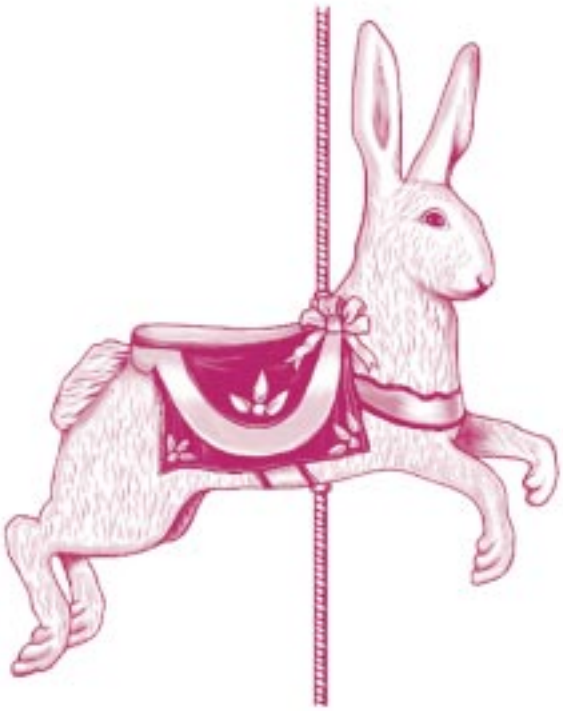
Go On

2 You are going to be at the amusement park from 10 A.M. to 4 P.M. and will spend a half hour eating lunch. The chart below shows how long it took you to go on the first 4 rides. These times include walking to the ride, waiting in line, and riding the ride.

RIDE TIMES

Ride	1	2	3	4
Time (in minutes)	18	24	14	20

Based on the average ride time for the first 4 rides, what is the ***maximum*** number of rides you can go on during the hours you are at the park? Provide the work that shows how you arrived at your answer.



Go On

3 On Fun Fridays, prizes and discounts are given away to the first 300 people who enter the amusement park. Every 6th person who enters the park gets a coupon for a free ride on the Twister, and every 14th person receives a 10% discount on any food they buy that day. Of the first 300 people who enter the park on Fun Friday, how many will receive both a free ride coupon ***and*** a 10% discount on food? Provide the work that shows how you arrived at your answer.

4 A parking lot near the amusement park charges $2.00 for the first hour and $0.50 for each additional half hour. Write an equation that you could use to calculate the parking fee (F) based on the number of hours (h) you spend at the amusement park.

Using your equation, how much will you pay the parking attendant for 6 hours of parking time? Provide the work that shows how you arrived at your answer.

Go On

Directions

Numbers 5 through 7 are about skateboarding. Show all of your work and write your answers directly in this booklet.

5 Ryan, Tracy, Suzanne, and Chris were discussing the order in which they should use a skateboard ramp. If only one person uses the ramp at a time, in how many possible combinations can the 4 friends use the ramp? Provide the work that shows how you arrived at your answer.

Go On

6 Over the last 6 weeks Ryan has been trying to increase the number of times he can skateboard from the top of one side of the ramp to the top of the other and back without stopping. The table shows his results for the first 6 weeks.

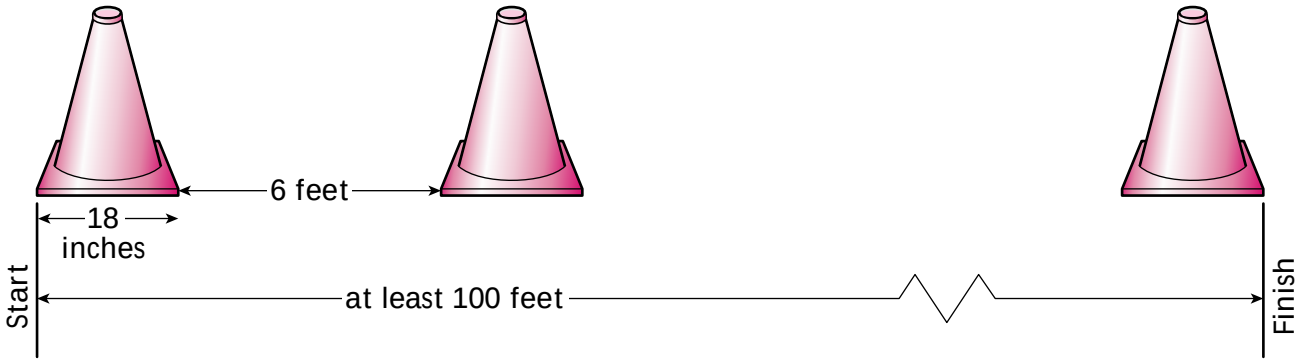
RYAN'S PRACTICE RESULTS

Week	Runs
1	1
2	3
3	7
4	13
5	21
6	31
7	
8	

If Ryan continues to improve in Weeks 7 and 8 following the same pattern shown in the table, how many successful runs can he expect each week? Provide the work that shows how you arrived at your answers.

Go On

7 Loni and Jackie are setting up a course so the skateboarders can practice their turns. They use traffic cones evenly spaced on a sloped ramp for the course.



If the base of each cone is 18 inches wide and the cones are spaced exactly 6 feet apart, what is the ***minimum*** number of cones required to make a course that is ***at least*** 100 feet long? Provide the work that shows how you arrived at your answer.

Exactly how many feet long will the course be?

Go On

Session 2

Telephone Rates

Directions

Show all of your work and write your answers directly in this booklet.

1 John and his family recently moved. His family asked him to help recommend a telephone company that offers the least expensive long-distance rates.

John contacted several telephone companies and has narrowed the choice to National Telex and Dial-Direct, Inc. The rates for the two companies are shown below.

TELEPHONE COMPANY RATES

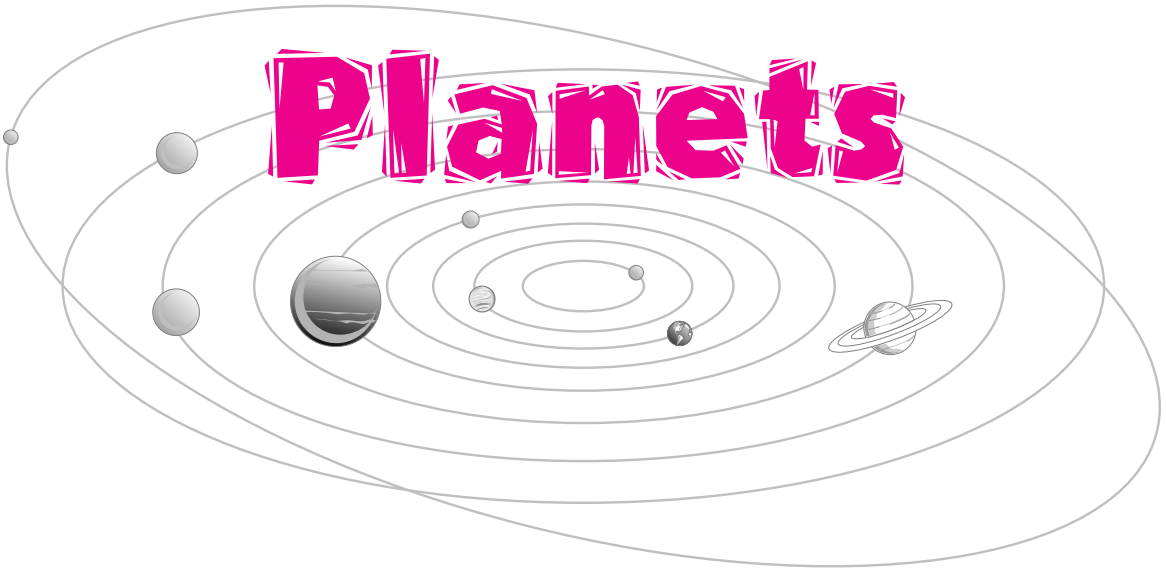
	National Telex		Dial-Direct, Inc.	
	First minute	Each additional minute	First minute	Each additional minute
Daytime	$0.46	$0.18	$0.30	$0.20
Evening	$0.40	$0.15	20% off daytime	20% off daytime
Weekend	$0.35	$0.12	30% off daytime	30% off daytime

Go On

John's family makes most of their long-distance calls on the weekends, and each call averages 10 minutes.

Use the weekend rates shown in the table to write a recommendation that John would present to his family to choose a particular company. Your recommendation should include a graph, table, or equations showing what length of phone call would cost the least at National Telex, the least at Dial-Direct, Inc., ***and*** when each company would charge the same amount.

Go On

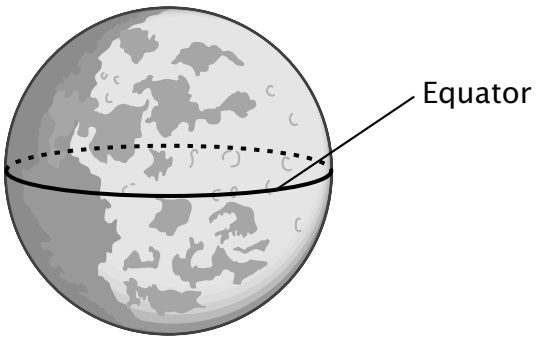


Planets

Directions

Numbers 8 through 10 are about the planets of the solar system.
Show all of your work and write your answers directly in this booklet.

8 The equator of a planet is defined as its circumference drawn perpendicular to its axis of rotation.



If the radius of Mars is 2100 miles, what is the length of its equator? Provide the work that shows how you arrived at your answer.

Go On

9 About 70% of Earth's surface is covered with water. If the radius of Earth is approximately 4000 miles, approximately how many square miles of its surface are landmasses? Provide the work that shows how you arrived at your answer.

(Surface Area = $4\pi r^2$)

10 Astronomers sent a signal to a space probe on the surface of Venus. The signal traveled at a speed of 186,000 miles per second and took 6 minutes 40 seconds to reach the probe and return to Earth. What was the approximate distance (expressed in scientific notation) between Earth and Venus at the time the signal was sent? Provide the work that shows how you arrived at your answer.

STOP